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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,901	12/08/2003	Mitsushi Ikeda	04329.3193	9313

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EXAMINER


WATSON, KRISTIE D

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/728,901	Applicant(s) IKEDA ET AL. 	
	Examiner Kristie Watson	Art Unit 2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>12/08/2003</u> <u>104/14/04</u> | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1 – 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Seppi, et al. U.S. Patent Application Publication 2005/ 0082491 A1.

3. Seppi et al. discloses an apparatus as claimed. Please see Seppi et al. Figures 6 – 8.

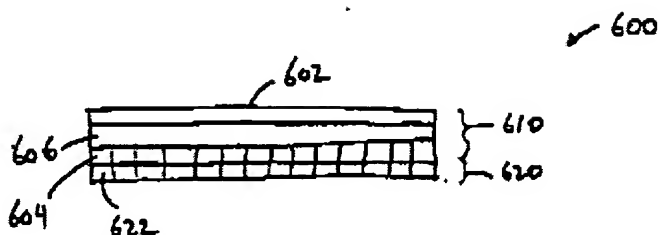


FIG. 6

4. Pertaining to claim 1, Seppi et al. (Paragraphs 0054, 0058, & 0062) teaches that a flat panel X-ray detector (620) (Paragraph 0054) which comprises: an X-ray-charge conversion film converting incident X-rays into electric charges ; and a pair of electrodes (602 & 604) 6 disposed in contact with both surfaces of said X-ray-charge conversion film (610) ; wherein said X-ray-charge conversion film (610) has a laminate structure including a plurality of metal halide films laminated along direction of c-axis of hexagonal crystal structure and differing in band gap from one another, and halogen atoms contained in said plurality of metal halide films are of the same kind among them.
5. Pertaining to claim 2, Seppi et al. (Paragraph 0058) teaches that an apparatus as claimed in claim 1, wherein at least one of said pair of electrodes is a conductive film which is lattice matched with said metal halide film disposed neighboring thereon.
6. Pertaining to claim 3, Seppi et al. (Paragraphs 0058 & 0062) teaches that an apparatus as claimed in claim 1, wherein said metal halide film comprises at least one metal halide selected from the group consisting of metal iodide, metal bromide and

metal chloride, said metal being selected from the group consisting of Pb, Hg, Sn, Bi, In, Tl, and Cd.

7. Pertaining to claim 4, Seppi et al. (Paragraphs 0058 & 0062) teaches that an apparatus as claimed in claim 1, wherein said metal halide film comprises at least one metal halide selected from the group consisting of PbI_2 , HgI_2 , SnI_2 , BiI_3 , InI , InI_3 , $CdTe$, and TlI .

8. Pertaining to claim 5, the examiner takes the position that the limitation of the lattice constant for lead iodide being 4.5 Angstroms is an inherent property.

9. Pertaining to claim 6, Seppi et al. (Paragraph 0058) teaches that an apparatus as claimed in claim 1, wherein said plurality of metal halide films comprise metal halides which are the same in kind with one another but differ in conductivity type from one another.

10. Pertaining to claim 7, Seppi et al. (Paragraph 0058) teaches that an apparatus as claimed in claim 6, wherein said plurality of metal halide films comprise an n-type metal halide film and a p-type metal halide film.

11. Pertaining to claim 8, Seppi et al. ((Paragraphs 0055, 0058, & 0061) teaches that an apparatus as claimed in claim 7, wherein said plurality of metal halide films comprise a Bi-doped n-type PbI_2 film and an In-doped p-type PbI_2 film.

12. Pertaining to claim 9, Seppi et al. (Paragraphs 0055 & 0058) teaches that an apparatus as claimed in claim 6, wherein said plurality of metal halide films comprise an n-type metal halide film, an i-type metal halide film and a p-type metal halide film.

13. Pertaining to claim 10, Seppi et al. (Paragraphs 0055 & 0058) teaches that an apparatus as claimed in claim 9, wherein said plurality of metal halide films comprise a Bi-doped n-type PbI_2 film, an undoped PbI_2 film and an In-doped p-type PbI_2 film.

14. Pertaining to claim 11, Seppi et al. (Paragraphs 0054 & 0058) teaches that an apparatus as claimed in claim 1, wherein said plurality of metal halide films comprise mixed crystalline metal halides which are the same in kind with one another but additionally contain different kinds of metal elements therein.

15. Pertaining to claim 12, Seppi et al. (Paragraphs 0054 & 0058) teaches that an apparatus as claimed in claim 11, wherein said plurality of metal halide films comprise a Pb_xByI film, a PbI_2 film and a Pb_xInyI film.

16. Pertaining to claim 13, Seppi et al. (Paragraphs 0054 & 0058) teaches that an apparatus as claimed in claim 1, wherein said plurality of metal halide films comprise various kinds of metal halides.

17. Pertaining to claim 14, Seppi et al. (Paragraphs 0054, 0058, & 0062) teaches that an apparatus as claimed in claim 13, wherein said plurality of metal halide films comprise a BiI_3 film, a PbI_2 film and an InI_3 film.

18. Pertaining to claim 15, Seppi et al. (Paragraphs 0054, 0058, & 0062) teaches that an apparatus as claimed in claim 1, wherein at least one of said electrodes comprise a hexagonal crystal structure having a-axis which is approximately equivalent to SnI_2 hcp (0001) a face centered cubic structure having a-axis which is approximately equivalent to (111) or a body-centered cubic structure having a-axis which is approximately equivalent to (110).

19. Pertaining to claim 16, Seppi et al. (Paragraphs 0059 & 0062) teaches a flat panel X-ray detector (620) which comprises: an X-ray-charge conversion film (610) converting incident X-rays into electric charge; pixel electrodes formed on said X-ray-charge conversion film to correspond with each of pixels which are arranged in a form of array switching elements each electrically connected with each of said pixel electrodes (602 & 604) (See Figure 6 above); signal lines each electrically connected with said switching element of each row; scanning lines each electrically connected with said

switching element of each column; and . a common electrode which is disposed on one of the surfaces of said X-ray-charge conversion film, which is opposite to the surface where said pixel electrodes of said X-ray-charge conversion film are disposed; wherein said X-ray-charge conversion film has a laminate structure comprising a plurality of metal halide films laminated along a direction of c-axis of hexagonal crystal structure and differing in band gap from one another, the halogen atoms of the metal halide films are of the same kind with one another.

20. Pertaining to claim 17, Seppi et al. (0059 & 0062) teaches that an apparatus as claimed in claim 16, wherein said plurality of metal halide films comprise a Bi-doped n-type PbI_2 film, an undoped PbI_2 film and an In-doped p-type PbI_2 film.

21. Pertaining to claim 18, Seppi et al. (0059 & 0062) teaches that an apparatus as claimed in claim 16, wherein said plurality of metal halide films comprise a $\text{Pb}_x\text{Bi}_y\text{I}$, a film a PbI_2 and a $\text{Pb}_x\text{In}_y\text{I}$ film.

22. Pertaining to claim 19, Seppi et al. (0059 & 0062) teaches that an apparatus as claimed in claim 16, wherein said plurality of metal halide films comprise a BiI_3 film, a PbI_2 film and an InI_3 film.

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23. Pertaining to claim 20, Seppi et al. (0059 & 0062) teaches that an apparatus as claimed in claim 16, wherein at least one of said pair of electrodes is a conductive film which is lattice matched with said metal halide film disposed neighboring thereon.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. *

Seppi et al. U. S. Publication 2005/0082491 A1 discloses an apparatus that flat panel x-ray detector is made of laminate comprising a halide metal . The TFT (Thin Film Transistor) gate electrode is comprised of one of the following: PbI_2 , HgI_2 , SnI_2 , BiI_3 , InI_3 , $CdTe$, and TlI .


25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kristie Watson whose telephone number is (571) 272-5052. The examiner can normally be reached on 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272- 2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kristie Watson
Examiner
Art Unit 2878

Kdw



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